

Recliner

Field of Invention

The present invention relates to a recliner.

Background of Invention

US Patent No. 5186518 discloses a conventional recliner capable of providing various positions. This conventional recliner is however very complicated in structure. This complicated structure includes many parts and eventually entails a very high cost. Moreover, this complicated structure is bulky and heavy.

The present invention is therefore intended to obviate or at least alleviate the problems encountered in prior art.

Summary of Invention

It is the primary objective of the present invention to provide a structurally simple recliner.

According to the present invention, a recliner includes a seat, a backrest pivotally installed on the seat between a high position and a low position, a stool movably installed on the seat between a withdrawn position and an extended position, a first mechanism for two-way pivotal of the backrest and one-way movement of the stool and a second mechanism for two-way pivotal of the stool.

1 Other objects, advantages and novel features of the invention will become
2 more apparent from the following detailed description in conjunction
3 with the attached drawings.

4 5 **Brief Description of Drawings**

6 The present invention will be described via detailed illustration of the
7 preferred embodiment referring to the drawings.

8
9 Figures 1 and 5 are perspective views of a recliner in different positions
10 according to the preferred embodiment of the present invention.

11
12 Figure 2 is a top view of a structure of the recliner of Figure 1.

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14 Figure 3 is a cross-sectional view taken along a line 3-3 in Figure 1.

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16 Figures 4 and 6 are similar to Figure 3 but show the structure of the
17 recliner in different positions.

18 19 **Detailed Description of Preferred Embodiment**

20 A recliner 10 according to the preferred embodiment of the present
21 invention is shown in Figures 1 to 6. Referring to Figure 1, the recliner
22 10 includes a seat 12, a backrest 14 installed on the seat 12 and a stool 16
23 movably connected with the seat 12. The backrest 14 can be pivoted
24 between a high position and a low position. The stool 16 is movable
25 between a withdrawn position and an extended position. The recliner 10
26 includes a handle 54 for controlling two-way pivotal of the backrest 14

1 and one-way movement of the stool 16. Moreover, the recliner includes
2 a handle 63 for controlling two-way movement of the stool 16.

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4 Referring to Figures 2 and 3, the seat 12 includes a frame 20 that will not
5 be described in detail for being known in this field.

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7 The backrest 14 includes includes a crossbar 32 rotationally installed on
8 the frame 20 and two levers 30 secured to the crossbar 33. For example,
9 the levers 30 are secured to the crossbar 33 by means of welding. Each
10 lever 30 includes an upper section 31 and a lower section 32. Although
11 not shown, a backrest plate is attached to the upper sections 31 of the
12 levers 30, and a pad made of sponge, for example, is attached to the
13 backrest plate in order to provide a soft feel to a user's back.

14

15 The stool 16 includes two linkages 40. Each linkage 40 includes a first
16 link 41 pivotally connected with the frame 20, a second link 42 pivotally
17 connected with the first link 41, a third link 43 pivotally connected with
18 the frame 20, a fourth link 44 pivotally connected with the third link 43
19 and a bracket 45 pivotally connected with both of the third link 43 and the
20 fourth link 44. The stool 16 further includes a crossbar 46 connected
21 between the first links 41 of the linkages 40. Moreover, the stool 16
22 includes a spring 47 connected between the crossbar 46 and the frame 20.
23 Although not shown, a stool plate is attached to the brackets 45 of the
24 linkages 40, and a pad made of sponge, for example, is attached to the
25 stool plate in order to provide a soft feel to a user's legs.

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1 Together with the handle 54, a first mechanism is provided for two-way
2 pivotal of the backrest 14 and one-way movement of the stool 16. The
3 first mechanism includes two linkages 50, a telescopic element 53 and a
4 crossbar 55. The telescopic element 53 may be a hydraulic cylinder if
5 so desired. The crossbar 55 is rotationally installed on the frame 20.
6 The handle 54 is secured to the crossbar 55 by means of welding for
7 example. Each linkage 50 includes a first link 51 and a second link 52.
8 The first link 51 is secured to the crossbar 55 by means of welding for
9 example. The second link 52 is pivotally connected with the first link
10 51 at an end and pivotally connected with the lower section 32 of
11 corresponding one of the levers 30 at an opposite end. The telescopic
12 element 53 is connected between the first link 51 of one of the linkages
13 50 and the crossbar 46.

14
15 Together with the handle 63, a second mechanism is provided for the
16 two-way movement of the stool 16. The second mechanism includes
17 two linkages 60 and a crossbar 64. The crossbar 64 is rotationally
18 installed on the frame 20. The handle 63 is secured to the crossbar 64
19 by means of welding for example. Each linkage 60 includes a first link
20 61 and a second link 62. The first link 61 is secured to the crossbar 64
21 by means of welding for example. The second link 62 is pivotally
22 connected with the first link 61 at an end and pivotally connected with the
23 crossbar 46 at an opposite end.

24
25 Referring to Figures 4 and 5, the handle 54 is pivoted toward the backrest
26 14. The first links 51 of the linkages 50 are pivoted toward the stool 16.

1 Because of the second links 52 of the linkages 50, the lower sections 32
2 of the levers 30 of the backrest 14 are pivoted forward, i.e. the upper
3 sections 31 of the levers 30 of the backrest 14 are pivoted forward
4 backward. Thus, the backrest 14 is lowered. Because of the cylinder
5 53, the first links 41 of the linkages 40 of the stool 16 are pivoted forward.
6 Thus, the stool 16 is extended.

7
8 Referring to Figure 6, the handle 54 is pivoted back to its original
9 position. The first links 51 of the linkages 50 are pivoted toward the
10 backrest 14. Because of the second links 52 of the linkages 50, the
11 lower sections 32 of the levers 30 of the backrest 14 are pivoted backward,
12 i.e. the upper sections 31 of the levers 30 of the backrest 14 are pivoted
13 forward. Thus, the backrest 14 is raised. The cylinder 53 is extended
14 while the first links 41 of the linkages 40 of the stool 16 is not moved.
15 That is, the stool 16 remains extended.

16
17 To withdraw the stool 16, the handle 63 is pivoted toward the stool 16.
18 The first links 61 of the linkages 60 are pivoted toward the backrest 14.
19 Because of the second links 62 of the linkages 60, the first links 41 of the
20 linkages 40 of the stool 16 are pivoted backward. Thus, the stool 16 is
21 withdrawn. Accordingly, the cylinder 53 is withdrawn.

22
23 The recliner 10 of the present invention is structurally simple. The
24 recliner 10 provides various positions through the use of the first and
25 second mechanism. Referring to Figures 1 to 3, in a first position, the
26 backrest 14 is raised, and the stool 16 withdrawn. Referring to Figures 4

1 and 5, in a second position, the backrest 14 is lowered, and the stool 16
2 extended. Referring to Figure 6, in a third position, the backrest 14 is
3 raised and the stool 16 extended.

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5 In a simplified embodiment, the first mechanism includes only one
6 linkage 50, and the second mechanism only one linkage 60. Each of the
7 crossbars 55 and 64 is replaced with a relatively short pin. Synchronous
8 pivotal of the levers 30 is achieved via securing both of them to the
9 crossbar 33. Synchronous pivotal of the first links 41 is achieved via
10 securing both of them to the crossbar 46.

11
12 In a further simplified embodiment, each of the crossbars 33 and 46 is
13 replaced with two pins. Synchronous pivotal of the levers 30 is
14 achieved via securing both of them to the backrest plate. Synchronous
15 pivotal of the first links 41 is achieved via securing both of them to the
16 stool plate.

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18 The present invention has been described via detailed illustration of the
19 preferred embodiment. Those skilled in the art can derive variations
20 from the preferred embodiment without departing from the scope of the
21 present invention. Therefore, the preferred embodiment shall not limit
22 the scope of the present invention defined in the claims.